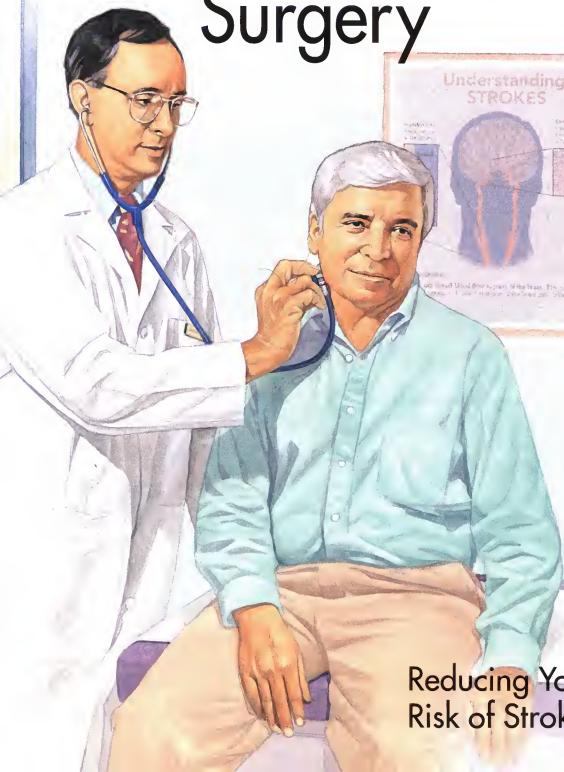


Carotid Artery Surgery



Reducing Your
Risk of Stroke

Your Carotid Artery Problem

Your doctor has told you that you may need surgery for a carotid artery problem. The two carotid arteries are blood vessels in the neck that supply oxygen-rich blood to your brain. When one of these vessels becomes narrowed, your brain can't get enough oxygen. This can lead to a **stroke** (sometimes called a brain attack). This booklet explains more about carotid artery problems. It also tells what can be done to reduce your risk of stroke.

Symptoms of a Stroke or "Mini-Stroke"

If blood flow to part of your brain stops, even very briefly, you may have symptoms of a stroke or "mini-stroke." Seek medical help right away, even if the symptoms last for only a moment. These symptoms include:

- Numbness or weakness in your arms or legs
- Sudden changes in vision or loss of vision in one eye
- Slurring your words
- A facial droop



Reducing Your Risk

Carotid endarterectomy is a surgery to reopen a narrowed carotid artery. If you've had symptoms of a stroke, you may need surgery right away. If you haven't had symptoms, your doctor may watch your problem over several months before deciding to operate.



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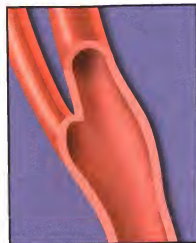
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What Can Cause a Stroke?

A healthy carotid artery is open, allowing blood to flow to the brain. But if the inside of the artery becomes narrow and rough, a stroke is more likely to occur. Certain health problems can cause narrowing and roughness. As the problem worsens, your risk of having a stroke can grow.

Open Carotid Arteries

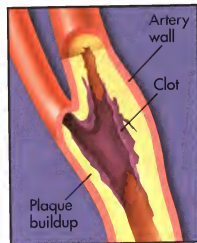
- The inside of the artery is open and has no signs of narrowing.
- The inside of the artery walls is smooth and healthy.
- Blood flows from your heart to your brain without any problems.
- Your brain gets all the blood and oxygen it needs.



An open artery lets blood flow easily to the brain.

Narrowed Carotid Arteries

- High blood pressure, diabetes, and other health problems can cause a fatty substance called **plaque** to build up on the inside of the artery walls. Lifestyle choices such as smoking and a fatty diet can also cause plaque to build up.
- The path through the artery is narrowed by plaque buildup.
- Plaque buildup makes the wall of the artery rough. This can cause blood clots to form.
- Narrowed arteries can prevent some parts of your brain from getting enough blood and oxygen to work normally.



A narrowed artery can lead to problems with blood flow.

The Dangers of a Narrowed Carotid Artery

Tiny blood clots and bits of plaque can break off and travel through the carotid artery. These are called **emboli**. Emboli can enter the smaller vessels in your brain. If the emboli are large enough, they can block blood flow and cause a stroke.

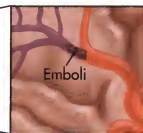
If You Have a Mini-Stroke (TIA)

Smaller emboli can briefly interrupt blood flow in parts of the brain. This causes a "mini-stroke," also called a **TIA** (transient ischemic attack). It can last from a few moments to a full day. TIAs are very serious. They can be a warning sign of a stroke. Symptoms of a TIA and a stroke are the same. Get medical help right away.

Plaque buildup on the artery wall can lead to emboli.



Emboli that have traveled into the brain can cause a TIA or stroke.



If You Have a Stroke

Larger emboli can cut off blood flow to parts of the brain. This causes a stroke. Without oxygen-rich blood, that part of the brain dies. Symptoms after a stroke depend on which part of the brain was affected. Some people have trouble walking after a stroke. Others can't speak. And in some cases, a stroke can kill. All strokes require emergency medical care.

Your Medical Evaluation

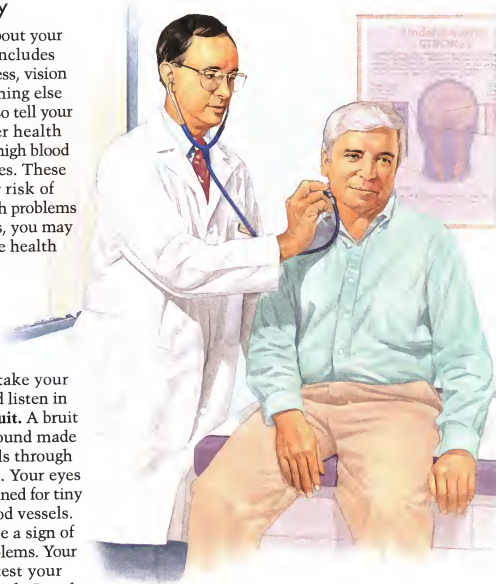
Your doctor will evaluate you to learn more about your carotid artery problem. Depending on the results, you may have other tests. The goal is to pinpoint the problem and learn whether surgery is needed.

Medical History

Tell your doctor about your symptoms. This includes numbness, weakness, vision problems, or anything else you've noticed. Also tell your doctor about other health problems, such as high blood pressure or diabetes. These can increase your risk of stroke. Since health problems can run in families, you may be asked about the health of your relatives.

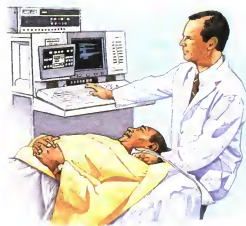
Physical Exam

Your doctor will take your blood pressure and listen in your neck for a **bruit**. A bruit is the rumbling sound made when blood travels through a narrowed vessel. Your eyes also may be examined for tiny spots in their blood vessels. These spots can be a sign of carotid artery problems. Your doctor also may test your reflexes and strength. Based on the results of your exam, other tests may be ordered.



Doppler/Duplex Ultrasound Tests

A technologist or doctor uses sound waves to make images of your carotid arteries (ultrasound). During the test, a special sensor is gently pressed against your neck. An image then forms on a monitor. The results show how severe the narrowing is.



Angiography

You may have a procedure called angiography. A doctor uses a special contrast "dye" and x-ray images to make a map of your carotid artery. You are injected with the dye as x-rays are taken. Before your angiography, you will get instructions on how to prepare.



Other Imaging Tests

A technologist or doctor may perform other imaging tests. These can include magnetic resonance angiography (MRA) and brain imaging tests. MRA makes an image of your carotid artery without using x-rays. Brain imaging tests can show damage from a past stroke.



Do You Need Surgery?

You and your doctor will discuss the best course of treatment for you. Whether you need surgery depends on your symptoms and how severely narrowed your carotid artery is. In many cases, surgery won't be needed. Instead, your doctor may watch your problem over several months.

When Surgery Is Required

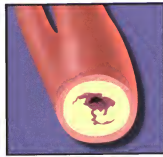
If you have mild narrowing but have had TIAs, you may need surgery. Even if you haven't had any TIA symptoms, your risk of having a stroke may still be high if one of your arteries is severely narrowed. In that case, surgery also may be needed.



Mild narrowing



Moderate narrowing



Severe narrowing

Your Treatment Plan

If surgery is needed, you'll have a carotid endarterectomy. The surgery removes plaque, reopening and smoothing your carotid artery. This reduces the chance of emboli forming.

Even if you don't need surgery, your doctor may suggest lifestyle changes. Controlling blood pressure, quitting smoking, eating healthier, and exercising regularly can help reduce your risk of stroke. You also may be given medication to help improve your blood flow.



Preparing for Surgery

You have a role to play in making carotid endarterectomy a success. Be sure to prepare for surgery as directed. Your doctor will tell you what you need to do. He or she also will explain the main risks and complications of surgery. Remember to ask about anything you don't understand.

Before Surgery

Follow the steps listed below. They can help the surgery go more smoothly.

- Tell your doctor about any medications you're taking (including aspirin), and ask if you should stop taking them.
- If you smoke, try to quit before surgery.
- Don't eat or drink anything after midnight the night before surgery. This includes water, chewing gum, and breath mints.
- If your doctor tells you to take medication the morning of surgery, swallow it with only small sips of water.



Risks and Complications

Like any surgery, carotid endarterectomy has certain risks and complications. Some of these risks include:

- Bleeding
- Temporary trouble speaking or swallowing
- Heart attack
- Stroke

Your Surgery

You will be given instructions on checking in, along with other details about your surgery. In most cases, surgery takes no longer than an hour or two. But you're likely to spend at least one night in the hospital. Bring personal care items and a robe with you. But leave anything of value, such as jewelry, at home.

Checking In

If you haven't already done so, you'll be asked to read and sign a consent form when you arrive. This form explains some details of your surgery. Your blood pressure and other vital signs also will be taken at this time. An intravenous (IV) line may be started.



Anesthesia

Anesthesia prevents pain during surgery. A doctor trained in anesthesia will explain which type you will have.

General anesthesia lets you "sleep" during the procedure. You will awaken soon after surgery is done.

Local anesthesia numbs the incision site so you don't feel pain during surgery. But you remain awake. You also may be given medicine to relax you.



The location and angle of the skin incision can vary.

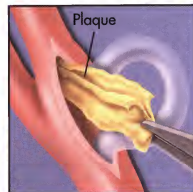
The Incision

A skin incision is made near one of the carotid arteries in your neck. The location and angle aren't always the same. Next, an incision is made in the artery itself.



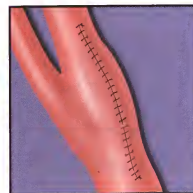
Rerouting Blood Flow

Your blood may be rerouted for a short time with a **shunt** (small tube). The shunt allows blood to flow to your brain while your doctor works on your artery. If blood flow is strong in your other carotid artery, you may not need a shunt.



Removing Plaque

The doctor carefully loosens plaque from the artery wall. The plaque is then removed. With the plaque gone, the chance of emboli forming is greatly reduced.



Closing Up

If you had a shunt, it is removed. Your doctor then closes the artery with **sutures** (stitches). Next, the skin incision is closed. A small tube may be placed in the incision to help with any drainage that may occur. A small bandage will cover the incision.

Recovering in the Hospital

After surgery, you'll be taken to a recovery area. You may later be moved to a regular hospital room where you'll stay for a day or two. In many cases, patients go home after one night.

The First Few Hours

You'll be in a recovery area or the intensive care unit for the first few hours after surgery. Any anesthesia you had will wear off quickly. Try not to move your head. It's normal to feel some discomfort near the incision. But medicine will help you feel better. You'll also have an IV to provide you with fluids. Your blood pressure, breathing, and other vital signs will be closely watched. Your loved ones may be able to visit with you soon.



As You Regain Strength

You may be moved to another hospital room within a few hours. Expect to be up and walking again within 24 hours. If you had a drain, it will be removed by a doctor or nurse the day after surgery. Most patients spend at least one night in the hospital. Your doctor will check you to see when you're ready to go home.



Back at Home

You'll start feeling back to normal within a day or two of getting home. But remember: You just had surgery. You need to take it easy, even if you feel fine. Follow any instructions your doctor gives you. In most cases, stitches dissolve on their own.

Speeding Your Recovery

The following tips can help speed your recovery:

- Spend your first few days relaxing at home. You can read, watch TV, or do other quiet, restful activities.
- Take medications as instructed.
- Don't drive until your doctor says it's OK. This will most likely take a week or two.
- Once your doctor says you can shower again, it's OK to get the incision area wet. But don't scrub it.
- If you shave, be careful around the wound. You may want to use an electric razor.



When to Call Your Doctor

Call your doctor right away if you notice any of the following signs of a problem:

- Your neck swells.
- There's oozing from the wound.
- An arm or a leg becomes numb or weak.
- You have sudden changes in vision or loss of vision in one eye.
- You have difficulty speaking.

Taking Control of Your Health

Whether or not you have surgery, you can make healthy lifestyle choices. These choices can reduce your risk of having a stroke. With a little planning, lifestyle changes can be easier than you might think.

Stop Smoking

If you smoke, there's no better choice you can make than to quit. Quitting smoking can lower your blood pressure and help make your arteries healthier. Here are some tips that may help:

- Join a quit-smoking support group.
- Talk to family members or friends who have quit.
- Talk to your doctor about trying quitting aids such as nicotine patches or gum.



Healthy Eating

A low-fat, high-fiber diet can help keep plaque from building up. Talk to your doctor about the best diet for you. And try the following:

- Eat at least five servings of fruits and vegetables each day.
- Eat more whole-grain products, such as whole-wheat bread, brown rice, or oatmeal.
- Control your cholesterol by trying fat-free milk and lower-fat meats such as skinless chicken breast or fish. And try to cut fattier foods out of your diet.



Be Active Regularly

Physical activity in your daily life can help reduce your risk of stroke. You don't have to join a gym or compete in a race to be active. It's best to slowly ease into activities you enjoy. Try the following:

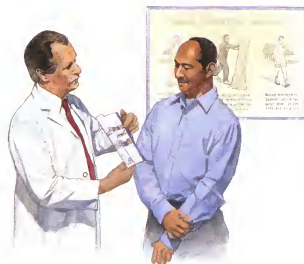
- Take three 10-minute walks each day.
- Join a mall-walking club.
- Go for a swim.
- Ride a bike around your neighborhood.



Managing Health Problems

Managing your health is a great way to reduce your risk of stroke. Talk to your doctor about the best ways to manage any health problems you may have. Your doctor can help you with the following:

- High blood pressure
- Diabetes
- Heart disease
- High cholesterol



Tips for Making Lifestyle Changes

Think small. That's the key to making lifestyle changes. Make just one or two changes at a time. Then move on to the next. For example, if you want to improve your diet, don't change everything at once. Instead, eat a few more fruits and vegetables each day. Once you're comfortable with that, try switching to leaner cuts of meat. With time, a healthier diet or other lifestyle changes can become second nature.

Living a Healthy Life

Carotid artery surgery may help reduce your risk of stroke. Whether or not you have surgery, you can keep that risk down. If you smoke, quit. Eat healthy, low-fat foods. Stay physically active. And work with your health care provider.

National Resources:

- National Stroke Association
1-800-STROKES (1-800-787-6537)
- American Heart Association
1-800-AHA-USA1 (1-800-242-8721)
- American Diabetes Association
1-800-342-2383

Local Resources:

- _____
- _____
- _____
- _____
- _____



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